

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA

DIVISION OF BIOLOGY

November 22, 1954

Dear Francis

I have meant to write for several weeks but I haven't had the time to write a long letter. Tonight I am also pressed and so this must be short.

Our schemes concerning RNA. They remain much as before expect that we find any alternative scheme involving



is just as plausible as our original one. It gives an opposite prediction for the RNA base ratios (high GC - low AT) are in fact, this is observed. However in view of possible complications like RNA self replication at differential rates, I'm hesitant to decide between alternatives. Also RNA

chains with triply esterified P_O₄ are tight though biodegradable.

While Cooley accepts contacts better than in some previously proposed

structures, I really don't feel happy about them. Hence RICA

may leave DNA template, as soon as chemical linkages are formed,

If this is true, ^{all} the monomers must be crystallized on DNA

surface before joining up. This can be done with hydrogen

bonds between P_O₄'s and sugar hydroxyls, energy coming

either from ADP like source or from cyclic anhydride bonds.

We continue to like anhydrides as precursors.

All of this was good practice for our current attempt

to make proteins on M.A. surfaces. A horrid task from

every viewpoint. Nevertheless we persist and think we shall

find a code, though we doubt that this shall be robust

one. An look at Gano's idea of DNA-protein. It would

be ridiculous to miss this because of prejudice for

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RNA. Am going under assumption that all (or almost all)
Sequences are possible. 39 steps in Corticotropin support
this phasit conclusion

Space filling models are essential even though
troublesome and forever falling over and apart. We have
almost all of Coreys set but this is still not enough.
Cambridge must acquire set if it is to enter
code game. Need approximately 2000 atoms [$\approx \$3000$]
This is not much money at current rates. I shall
write to Max about this. I cannot really change
deal since it would shell of my returning to
Cambridge. Hence Cambridge must "enthuse" spontaneously

Crellin has almost put R. Anode into use and so they cannot easily turn down request. ~~soon~~ Should be done soon or Alex Rich will ^{seize} upon idea of having his set made by Caltech and then Cambridge will wait for years.

I am going to Berkeley over Thanksgiving and to East Coast over Christmas. Will try to be in Cambridge by summer. RIVATIECLUB has sponsor - Quartermaster Corps-U.S. Army. Will pay for biannual meetings in Boston. We shall try to have you invited for spring meeting.

What is Maurice doing.

Regards to Odile

Jim

PP/CR/D/2/45

Please send me some

P.R.S. reprints. Can I

have 100. Many

requests.